

melting.--

BJ

Set out

--21. (New) The method according to claim 18, wherein the highly electroconductive core is copper.--

--22. (New) The method according to claim 19, wherein the highly electroconductive core is copper.--

REMARKS

Reconsideration of the above-identified patent application, as amended, is respectfully requested. No new matter has been added. A marked up version of the claims is annexed hereto in Appendix A.

new matter?

The paragraph beginning on page 5, line 17 of the Specification has been amended to better define the Applicant's invention. Specifically, the word ---expanded--- has been inserted in place of the word "extruded." Support for this amendment is inherent in the term "upsetting," on page 5, line 17, for example, since "upsetting" involves increasing the diameter of a material by compressing its length.

Claims 1-3 and 5-17 have been amended to conform with standard U.S. practice. Specifically, the term "characterized in that" has been replaced with the term - - - wherein - - -.

Claim 1 has been amended to recite "A method for manufacturing a suspension bar...wherein the core is connected to the outer jacket by placing a core preform inside the outer jacket and by drawing an arbor through the preform in a drawing machine." Support for this amendment may be found in former Claim 4, and in the Specification at page 5, lines 1-15.

Claim 7 has been amended to replace the word "extruded," with - - - expanded- - -

, which is the same change made to the paragraph beginning on page 5, line 17 of the Specification. Support for this amendment is inherent in the term “upsetting,” on page 5, line 17, for example, since “upsetting” involves increasing the diameter of a material by compressing its length. Additionally, support is found in the Specification at page 5, lines 17-23.

New Claims 18, 19 and 20 have been added. Support for new Claim 18 is found in former Claim 1, and in the Specification e.g., at page 5, lines 17-23. Support for new Claim 19 is found in former Claims 1, and in the Specification, e.g. at page 5, line 25 - page 7, line 3. Support for new Claim 20 is found in former Claims 1 and 8 and in the Specification, e.g. at page 6, line 6 - page 7, line 4.

New Claims 21 and 22 have been added, and depend from new Claims 18 and 19. Support for new Claims 21 and 22 is found in amended Claim 2, and throughout the Specification, specifically, e.g., at page 4, line 28; page 5, lines 21 and 25; and page 6, line 24.

The Abstract has been objected to as containing “legal phraseology,” specifically, the term “means.” The term “means” has been removed, and other non-substantive changes have been made, as may be seen above, and in the annexed Appendix A.

Former Claims 1 and 2 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,647,358 to Bartsch (“Bartsch”), in view of U.S. Patent No. 4,109,374 to Whetstone, et al. (“Whetstone”).

Bartsch relates to a current-feeding cathode mounting device for the electrolytic refining of copper. Bartsch describes a permanent cathode wherein a hollow copper pipe is placed inside a steel sheath. In the method of manufacture described by Bartsch, the outer jacket is initially split longitudinally. Later, the copper pipe is inserted into the sheath (2), and the sheath is welded closed. See Bartsch, column 2, lines 38-57 and column 3, lines 9-13.

Bartsch does not teach or suggest “drawing, wherein the core is connected to the outer jacket by placing a core preform inside the outer jacket and by drawing an arbor through the preform in a drawing machine,” as now recited in amended Claim 1. Indeed, the Examiner stated that “Bartsch does not disclose a method of joining the parts of the bar by drawing, upsetting, melting or casting.” See Office Action at page 3. Whetstone does not remedy this deficiency.

Whetstone describes forming a superconductor 10 consisting of a normally conducting matrix material 16, and superconductive tubes inside the matrix which are in intimate contact with a core 14. The tubes are superconductive material, in this case, Nb-Ti-alloys (col. 4, line 62), and their quantity can vary widely (Whetstone, col. 4, lines 22-25). In order to get the tubes and the core material in intimate contact, the whole matrix is mechanically reduced (col. 2, lines 58-64). Whetstone describes combining parts of a whole superconductor matrix not how to combine a single tube with its core.

Furthermore, there is no motivation to combine the single conductor current-feeding cathode-mounting device of Bartsch with the multiple superconductor composite of Whetstone to result in the method of Applicant’s amended Claim 1. Bartsch does not teach or suggest combining with the mechanical reduction of Whetstone. Whetstone describes using cores for stabilization of the superconducting material. See at least Whetstone, column 2, lines 49-68. Bartsch does not teach or suggest having such a core, but rather, describes a “hollow copper section.” See Bartsch, e.g., Abstract, line 9 and Figures 3-5. Even if the teachings of Bartsch and Whetstone were properly combinable, such a combination would not result in teaching or suggesting the method recited in claim 1.

Whetstone does not teach or suggest “drawing, wherein the core is connected to

the outer jacket by placing a core preform inside the outer jacket and by drawing an arbor through the preform in a drawing machine," as now recited in amended Claim 1. In contrast, Whetstone describes drawing an entire composite through a die as a secondary step after each component of the composite is placed in the proper orientation relative to the other components the composite. See Whetstone, e.g., Abstract, lines 9-11; column 9, lines 35-39; column 10, lines 18-26 and 64-66.

For these reasons, Applicant respectfully submits that Claim 1, as amended, defines patentable subject matter over Bartsch and Whetstone, alone or in combination. Since Claims 2-6, depend from Claim 1, they also patentably distinguish over Bartsch and Whetstone. Withdrawal of the rejection applied to former Claims 1 and 2 under 35 U.S.C. §103(a) as being unpatentable Bartsch, in view Whetstone is respectfully requested.

Former Claim 3 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone, further in view of U.S. Patent No. 3,849,879 to Kuchek ("Kuchek").

As mentioned above, Bartsch and Whetstone are deficient in a number of respects in teaching or suggesting the features of amended Claim 1. As mentioned above, Claim 3 is believed to patentably distinguish over these references. Kuchek does not remedy the deficiencies of Bartsch and Whetstone.

Kuchek describes a method for making a composite magnesium-titanium conductor. Kuchek describes iron, titanium and tantalum as a casing and aluminum, copper, sodium, tin or zinc as a core for an electrical conductor.

Kuchek is deficient in the same ways in teaching or suggesting the method of

Claims 1 or 3, as described above with reference to Bartsch and Whetstone. Kuchek does not teach or suggest “drawing, wherein the core is connected to the outer jacket by placing a core preform inside the outer jacket and by drawing an arbor through the preform in a drawing machine,” as now recited in amended Claim 1.

Moreover, Kuchek does not teach or suggest “a refined steel outer jacket” as recited in amended Claim 1 in combination with an aluminum core, as recited in amended Claim 3.

For these reasons, Applicant respectfully submits that Claim 3, as amended, defines patentable subject matter over Bartsch, Whetstone and Kuchek, alone or in combination. Withdrawal of the rejection applied to former Claim 3 under 35 U.S.C. §103(a) as being unpatentable Bartsch, in view Whetstone, further in view of Kuchek is respectfully requested.

Former Claims 4, 5 and 6 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,647,358 to Bartsch in view of Whetstone, further in view of U.S. Patent No. 4,503,602 to Hillmann (“Hillmann”). Claim 4 has been canceled without prejudice.

As mentioned above, Bartsch and Whetstone are deficient in a number of respects in teaching or suggesting the features of amended Claim 1. As mentioned above, Claims 4 and 5 are believed to patentably distinguish over these references. Hillmann does not remedy the deficiencies of Bartsch and Whetstone. Hillmann does not teach or suggest a “core ... connected to the outer jacket by placing a core preform inside the outer jacket and by drawing an arbor through the preform in a drawing machine,” as recited in amended Claim 1. Claims 5 and 6 depend from Claim 1 and therefore also incorporate these features.

In contrast, Hillmann relates to the manufacturing of superconductors. The arrangement comprises helically shaped conductor strands arranged inside a tube. The tube is fabricated from a metal sheet, which is welded together from the long sides. The "composite steel-copper" described in column 1, line 62 of Hillmann refers to the outer metal sheet which is welded around the helix strand 1 to act as a "stabilizing metal for the superconductor" (lines 57-58), and is not formed with the arbor, but independently of that step. The tubular body with the helical strands is reduced by drawing or rolling. See Hillmann, column 1, lines 26-32. Hillmann describes an arbor used for forming the helical conductor strands by winding the strands around the arbor., however, Hillman does not teach or suggest such an arbor being used in the reducing process. Figures 5 and 6 show that the arbor is absent from the inside of the helix. Moreover, the arbor cannot be left inside the helix as space for coolant flow is required by the description of Hillmann. See Hillman, e.g. Abstract, line 3.

For these reasons, Applicant respectfully submits that Claims 5 and 6, as amended, define patentable subject matter over Bartsch, Whetstone and Hillmann, alone or in combination. Withdrawal of the rejection applied to formers Claims 5 and 6 under 35 U.S.C. §103(a) as being unpatentable Bartsch, in view Whetstone, further in view of Hillmann is respectfully requested.

Former Claim 7 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone, further in view of U.S. Patent No. 5,056,209 to Ohashi, et al. ("Ohashi"). Claim 7 now depends from Claim 18, which recites "A method for manufacturing a suspension bar... wherein the parts of the bar are joined to each other by upsetting."

The deficiencies of Bartsch and Whetstone has been set forth above.

Additionally, neither Bartsch nor Whetstone, neither alone, nor in combination, teach or suggest joining parts together by upsetting. Ohashi does not remedy the deficiencies of these references.

Ohashi does not teach or suggest upsetting as a method for joining parts of a bar to each other. Rather Ohashi describes manufacturing of a tube from two different types of metals having different deformation resistances. Combining of tubes in Ohashi takes place by situating the tubes concentrically, and by filling space inside the inner most tube with an additional material. In one embodiment (col. 17, lines 8-30), the outer pipe is of wrought carbon steel, the inner pipe is low carbon steel and the packing material between the pipes is stellite powder.

The pressing that occurs in Ohashi is only for compacting the powder-packed layer and not for pressing the pipes together. Rather, Ohashi describes extrusion as a means for attaching the pipe layers to one another. See Ohashi, Figure 1.

For these reasons, Applicant respectfully submits that Claim 7, as amended, defines patentable subject matter over Bartsch, Whetstone and Ohashi, alone or in combination. Withdrawal of the rejection applied to former Claim 7 under 35 U.S.C. §103(a) as being unpatentable over Bartsch, in view Whetstone, further in view of Ohashi is respectfully requested.

Former Claims 8, 9 and 14 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone, further in view of U.S. Patent No. 3,648,757 to Willingham (“Willingham”). Claim 8 has been canceled and the subject matter of Claim 8 has been incorporated into Claim 19. Claims 9 and 14 have been amended to depend from Claim 19. Claim 19 recites, “wherein the parts of the bar are joined to each other by casting, and wherein

in order to obtain a metallurgical bond between the jacket and the core, the core is attached to the jacket by casting it in molten form inside the solid jacket.”

The deficiencies of Bartsch and Whetstone have been set forth above.

Additionally, neither Bartsch nor Whetstone, neither alone, nor in combination, teach or suggest joining parts together by casting, wherein the core is attached to the jacket by casting it in molten form inside the solid jacket, as recited in newly added Claim 19. Willingham does not remedy the deficiencies of these references.

Willingham describes making of multi-layer mold for iron pipe manufacturing. A mandrel 10, which has the configuration of the pipe to be cast, is first applied with a coating such as tin or lead to thickness of 0.0005 in. After that, a low-stress material such as nickel, copper or cobalt is electro-deposited on the coating. The electro-depositing is continued until a sleeve 15 is formed on the mandrel. The mandrel with the sleeve thereon is placed within a form 16, which functions as a mold. A molten metal like aluminum, magnesium or the like is poured around the mandrel and allowed to harden to form an outer layer. See Willingham col. 3. lines 54-55, 63-64, 69-72. Willingham describes forming the jacket onto the core by casting.

Willingham does not teach or suggest a suspension bar “wherein the parts of the bar are joined to each other by casting, and wherein in order to obtain a metallurgical bond between the jacket and the core, the core is attached to the jacket by casting it in molten form inside the solid jacket”

For these reasons, Applicant respectfully submits that newly added Claim 19 and Claims 9 and 14, as amended, define patentable subject matter over Bartsch, Whetstone and Willingham, alone or in combination. Withdrawal of the rejection applied to former Claims 9 and 14 under 35 U.S.C. §103(a) as being unpatentable over Bartsch, in view Whetstone, further

in view of Willingham is respectfully requested.

Former Claim 10 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone, further in view of U.S. Patent No. 3,909,301 to Schenk, Jr. (“Schenk”). Amended Claim 10 recites, “the core preform is placed in solid form inside the outer jacket and then the core is melted inside the outer jacket which remains in sufficiently solid form.”

The deficiencies of Bartsch and Whetstone have been set forth above. Additionally, neither Bartsch nor Whetstone, neither alone nor in combination, teach or suggest a suspension bar “wherein the parts of the bar are joined to each other by melting.”

Schenk describes methods for forming metal-metal bonds that are capable of bonding battery posts to inter-cell connectors. The process involves moving a heated electrode into the bonding area in order to heat and melt the portions of the work pieces to be bonded. The electrode melts the lead battery post 148; 149 collar 159 of connector 151 and upper flange portion 155 on bushing 149. When the electrode is removed from the area, all the molten materials are allowed to cool and solidify and they together form a bond between the work pieces. Additionally, the metal involved in this procedure is lead. See Schenk, col. 20, lines 41-66. Thus, Schenk describes that parts of both work pieces to be connected are melted.

Schenk does not teach or suggest a method for manufacturing a suspension bar wherein “the core preform is placed in solid form inside the outer jacket and then the core is melted inside the outer jacket which remains in sufficiently solid form,” as recited in amended Claim 10.

For these reasons, Applicant respectfully submits that newly added Claim 19 and

Claims 9 and 14, as amended, define patentable subject matter over Bartsch, Whetstone and Schenk, alone or in combination. Withdrawal of the rejection applied to former Claim 10 under 35 U.S.C. §103(a) as being unpatentable over Bartsch, in view Whetstone, further in view of Schenk is respectfully requested.

Former Claim 11 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone and Willingham, further in view of U.S. Patent No. 3,780,555 to Balthazar et al. ("Balthazar"). Amended Claim 11 depends from Claim 19 or 10.

The deficiencies of Bartsch, Whetstone and Willingham have been set forth above. Neither Bartsch, Whetstone nor Willingham teach or suggest a method for manufacturing a suspension bar "wherein in order to obtain a metallurgical bond between the jacket and the core, the core is attached to the jacket by casting it in molten form inside the solid jacket," as recited in newly added Claim 19 or wherein "the core preform is placed in solid form inside the outer jacket and then the core is melted inside the outer jacket which remains in sufficiently solid form," as recited in amended Claim 10. Balthazar does not remedy these deficiencies.

Balthazar et al describes a method to prepare seamless pipes for nuclear power plants by centrifugal casting. The centrifugal casting system includes a casting die (13), a cylindrical tube, which is rotated and into which molten pipe metal is poured. The casting die is provided with a preheater (35). However, preheating of a casting die does not teach or suggest heating of the jacket before bonding it with its core, since Balthazar does not attempt to bond the die (13) with the pipe preform (37).

Balthazar does not teach or suggest a method for manufacturing a suspension bar

“wherein in order to obtain a metallurgical bond between the jacket and the core, the core is attached to the jacket by casting it in molten form inside the solid jacket,” as recited in newly added Claim 19 or wherein “the core preform is placed in solid form inside the outer jacket and then the core is melted inside the outer jacket which remains in sufficiently solid form,” as recited in amended Claim 10. Balthazar also does not teach or suggest a method wherein an “outer jacket is preheated before bonding,” as recited in amended Claim 11.

For these reasons, Applicant respectfully submits that Claim 11, as amended, defines patentable subject matter over Bartsch, Whetstone, Willingham and Balthazar, alone or in combination. Withdrawal of the rejection applied to former Claim 11 under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone and Willingham, further in view of Balthazar is respectfully requested.

Former Claim 12 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone and Willingham, further in view of Ohashi. Amended Claim 12 depends from newly added Claim 19 and amended Claim 10.

The deficiencies of Bartsch, Whetstone, Willingham and Ohashi have been set forth above. None of the cited references teaches or suggests a method for manufacturing a suspension bar “wherein in order to obtain a metallurgical bond between the jacket and the core, the core is attached to the jacket by casting it in molten form inside the solid jacket,” as recited in newly added Claim 19 or wherein “the core preform is placed in solid form inside the outer jacket and then the core is melted inside the outer jacket which remains in sufficiently solid form,” as recited in amended Claim 10. Moreover, none of these reference teaches or suggests “the outer jacket and core are preheated during bonding,” as recited in amended Claim 12.

For these reasons, Applicant respectfully submits that Claims 10 and 19, as amended, define patentable subject matter over Bartsch, Whetstone, Willingham and Ohashi, alone or in combination. Since Claim 12 depends from Claim 10 or Claim 19, it also patentably distinguishes over Bartsch, Whetstone, Willingham and Ohashi, alone or in combination. Withdrawal of the rejection applied to former Claim 12 under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone and Willingham, further in view of Ohashi is respectfully requested.

Former Claim 13 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone and Willingham, further in view of JP 01180718 A to Yamada et al. ("Yamada"). Claim 13 has been amended to depend from Claim 19 or Claim 10.

The deficiencies of Bartsch, Whetstone and Willingham in teaching or suggesting the subject matter of Claims 10 and 19 have been set forth above. Yamada does not remedy these deficiencies.

Yamada describes forming a duplex tube wherein the tubes are fitted to each other by centrifugally casting the inner tube inside the outer tube. After the inner tube is cooled, an induction heating device and a water shower are integrated and moved in an axial direction in order to tighten the connection between the tubes.

Yamada does not teach or suggest a method for manufacturing a suspension bar "wherein in order to obtain a metallurgical bond between the jacket and the core, the core is attached to the jacket by casting it in molten form inside the solid jacket," as recited in newly added Claim 19 or wherein "the core preform is placed in solid form inside the outer jacket and

then the core is melted inside the outer jacket which remains in sufficiently solid form," as recited in amended Claim 10.

For these reasons, Applicant respectfully submits that Claims 10 and 19, as amended, define patentable subject matter over Bartsch, Whetstone, Willingham and Yamada, alone or in combination. Since Claim 13 depends from Claim 10 or Claim 19, it also patentably distinguishes over Bartsch, Whetstone, Willingham and Yamada, alone or in combination. Withdrawal of the rejection applied to former Claim 13 under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone and Willingham, further in view of Yamada is respectfully requested.

Former Claims 15 and 16 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone and Willingham, further in view of U.S. Patent No. 4,807,688 to Beetle ("Beetle"). Amended Claims 15 and 16 depend from Claim 19.

The deficiencies of Bartsch, Whetstone and Willingham have been set forth above. Beetle does not remedy these deficiencies.

Beetle describes a process for forming metal objects using a submerged mold. Beetle does not teach or suggest a method for manufacturing a suspension bar wherein "the parts of the bar are joined to each other by casting, and wherein in order to obtain a metallurgical bond between the jacket and the core, the core is attached to the jacket by casting it in molten form inside the solid jacket," as recited in newly added Claim 19.

For these reasons, Applicant respectfully submits that Claim 19, as amended, defines patentable subject matter over Bartsch, Whetstone, Willingham and Beetle, alone or in combination. Since Claims 15 and 16 depend from Claim 19, they also patentably distinguish

over Bartsch, Whetstone, Willingham and Beetle, alone or in combination. Withdrawal of the rejection applied to former Claims 15 and 16 under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone and Willingham, further in view of Beetle is respectfully requested.

Former Claims 15 and 17 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone and Willingham, further in view of U.S. Patent No. 5,005,631 to Dwivedi ("Dwivedi"). Amended Claims 15 and 17 depend from Claim 19.

The deficiencies of Bartsch, Whetstone and Willingham have been set forth above. Dwivedi does not remedy these deficiencies.

Dwivedi describes a method for forming a metal matrix composite body. In Dwivedi, a permeable mass preform body, such as slip cast silicon carbide, is placed into contact from its external surface with molten matrix metal like aluminum. During contact, the molten matrix metal infiltrates the preform. The preform is in an upright position in the refractory vessel during the infiltration, but the perform body is not totally immersed into the matrix metal.

Dwivedi does not teach or suggest a method for manufacturing a suspension bar wherein "the parts of the bar are joined to each other by casting, and wherein in order to obtain a metallurgical bond between the jacket and the core, the core is attached to the jacket by casting it in molten form inside the solid jacket," as recited in newly added Claim 19.

For these reasons, Applicant respectfully submits that Claim 19, as amended, defines patentable subject matter over Bartsch, Whetstone, Willingham and Dwivedi, alone or in combination. Since Claims 15 and 17 depend from Claim 19, they also patentably distinguish over Bartsch, Whetstone, Willingham and Dwivedi, alone or in combination. Withdrawal of the

rejection applied to former Claims 15 and 17 under 35 U.S.C. §103(a) as being unpatentable over Bartsch in view of Whetstone and Willingham, further in view of Dwivedi is respectfully requested.

CONCLUSION

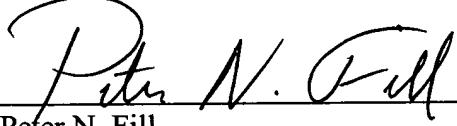
In light of the foregoing remarks, Applicants respectfully submit that all claims, as amended, define patentable subject matter over the cited art, considered alone or in combination. An early allowance of all claims is earnestly solicited.

The Commissioner is hereby authorized to charge any additional fees which may be required for the timely consideration of this amendment under 37 C.F.R. §§ 1.16 and 1.17, or credit any overpayment to Deposit Account No. 13-4500, Order No. 6009-4601 IB.

Respectfully submitted,
MORGAN & FINNEGAN, L.L.P.

Dated: November 29, 2002

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APPENDIX A
MARKED-UP VERSION OF AMENDMENTS

IN THE SPECIFICATION

Please amend the paragraph beginning on page 5, line 17 as follows:

A permanent cathode suspension bar can also be fabricated by upsetting, whereby a suitable core is set inside the outer jacket so that by pressing the ends of the core, it may be [extruded] expanded very tight to the jacket at least at the important places i.e. at the ends. The temperature can be adjusted to favour the shaping of the copper as in drawing. Depending on the temperature used, a metallurgical contact between the jacket and the core can be made also by drawing or upsetting.

Please amend the Abstract as follows:

[The present invention relates to a] A method for manufacturing a suspension bar for a permanent cathode used in the electrolysis of metals is disclosed, wherein the suspension bar is formed of a rigid metal outer jacket and a highly conductive core attached inside it. [By means of this] This connection results in, [a] tight contact [is achieved] between the outer jacket and the core [and this connection is made] by drawing, upsetting, melting or casting.

IN THE CLAIMS

Please cancel Claims 4 and 8 without prejudice.

Amend Claims 1-3 and 5-17 as follows:

1. (Amended) A method for manufacturing a suspension bar for a permanent cathode used in an electrolysis of metals, wherein the suspension bar is made of a rigid metal

outer jacket and a highly electroconductive inner part inside it, after which the outer jacket is removed at least from one end of the bar, [characterized in that] wherein a refined steel outer jacket and a highly electroconductive core are in close contact with each other wherein the parts of the bar are joined to each other by drawing, [upsetting, melting or casting] wherein the core is connected to the outer jacket by placing a core preform inside the outer jacket and by drawing an arbor through the preform in a drawing machine.

2. (Amended) [A] The method according to claim 1, [characterized in that] wherein the highly electroconductive core is copper.

3. (Amended) [A] The method according to claim 1, [characterized in that] wherein the highly electroconductive core is aluminum.

5. (Amended) [A] The method according to claim [4] 1, [characterized in that] wherein a steel bar is used as the arbor.

6. (Amended) [A] The method according to claim 5, [characterized in that] wherein the steel bar is left inside the highly conductive core.

7. (Amended) [A] The method according to claim [1] 18, [characterized in that] wherein the core is connected to the outer jacket by placing a core preform inside the outer jacket and by pressing the ends of the core, so that the core is [extruded] expanded tight to the jacket.

9. (Amended) [A] The method according to claim 8, [characterized in that] wherein casting is made using the outer jacket as the mould into which the molten core metal is poured.

10. (Amended) [A] The method according to claim [1] 20, [characterized in that] wherein in order to obtain a metallurgical bond between the jacket and the core, the core preform is placed in solid form inside the outer jacket and then the core is melted inside the outer jacket which remains in sufficiently solid form.

11. (Amended) [A] The method according to claim [8]19 or 10, [characterized in that] wherein the outer jacket is preheated before bonding.

12. (Amended) [A] The method according to claim [8] 19 or 10, [characterized in that] wherein the outer jacket and the core are preheated during bonding.

13. (Amended) [A] The method according to claim [8] 19 or 10, [characterized in that] wherein the outer jacket and the core are preheated after bonding.

14. (Amended) [A] The method according to claim [8] 19 or 10, [characterized in that] wherein the outer jacket is held in a vertical position with the bottom end closed when core metal is put into the jacket.

15. (Amended) [A] The method according to claim [8] 19, [characterized in that] wherein casting is made by immersing the outer jacket into a melt of core metal.

16. (Amended) [A] The method according to claim 15, [characterized in that] wherein the outer jacket is immersed in the melt essentially in a horizontal position, and wherein the ends of the jacket are closed and [that] holes are made in the upper part of the jacket for pouring the melt and releasing air.

17. (Amended) [A] The method according to claim 15, [characterized in that] wherein the outer jacket is immersed in the melt essentially in a vertical position, wherein the bottom end of the jacket is closed.

Please add Claims 18 - 22 as follows:

--18. (New) A method for manufacturing a suspension bar for a permanent cathode used in an electrolysis of metals, wherein the suspension bar is made of a rigid metal outer jacket and a highly electroconductive inner part inside it, after which the outer jacket is removed at least

from one end of the bar, wherein a refined steel outer jacket and a highly electroconductive core are in close contact with each other wherein the parts of the bar are joined to each other by upsetting.--

--19. (New) A method for manufacturing a suspension bar for a permanent cathode used in an electrolysis of metals, wherein the suspension bar is made of a rigid metal outer jacket and a highly electroconductive inner part inside it, after which the outer jacket is removed at least from one end of the bar, wherein a refined steel outer jacket and a highly electroconductive core are in close contact with each other wherein the parts of the bar are joined to each other by casting, and wherein in order to obtain a metallurgical bond between the jacket and the core, the core is attached to the jacket by casting it in molten form inside the solid jacket.--

--20. (New) A method for manufacturing a suspension bar for a permanent cathode used in an electrolysis of metals, wherein the suspension bar is made of a rigid metal outer jacket and a highly electroconductive inner part inside it, after which the outer jacket is removed at least from one end of the bar, wherein a refined steel outer jacket and a highly electroconductive core are in close contact with each other wherein the parts of the bar are joined to each other by melting.--

--21. (New) The method according to claim 18, wherein the highly electroconductive core is copper.--

--22. (New) The method according to claim 19, wherein the highly electroconductive core is copper.--